REMARKS

Claims 1-26 are currently pending in the application, with claims 1, 4 and 7 being independent. Claims 1-6 were pending prior to the Office Action. In this Reply, claims 7-26 have been added to particularly define what the Applicant regards as his invention. Claims 1 and 4 have been amended only for clarification, without narrowing their scope. The amendments to claims 1 and 4 were not made to overcome any statutory rejection.

The Examiner is respectfully requested to reconsider the rejections in view of the amendments and remarks set forth herein. Applicant respectfully requests favorable consideration thereof in light of the amendments and comments contained herein, and earnestly seeks timely allowance of the pending claims.

Claim Rejections - 35 USC §102

The Examiner rejected claims 1-6 under 35 U.S.C. 102 (b) as being anticipated by US 5,345,313 ("Blank"). Applicant traverses this rejection.

Applicant respectfully submits that the Examiner fails to establish a *prima facie* case of anticipation.

Blank merely discloses a system and a method for editing digital images including an object and a background. The periphery, or edge, of the object has a first hue, and the background has a second hue. Based upon the difference between the hues and a predetermined hue difference, a processor locates the edge of the object and removes portions of the image (i.e., the background) that are outside the edge. Then, the object can be combined with a preselected background so as to form a composite image. Optionally, a gamma attribute of the image of the preselected background and a gamma attribute of the image of the object can be matched, thereby making the object appear as if it was imaged under the same lighting conditions as the preselected background (Abstract).

A digital image processed by Blank may include an object such as a human, positioned against a background. The background of Blank may be a monochrome background, or a background of a predetermined color and pattern.

In Blank, for a monochrome background, a transputer 44 (Fig. 3) compares the gammas of adjacent pixels with a predetermined difference (col. 8 lines 14-18). The gamma of a particular pixel is a numeric value that represents pixel attributes that relate to the hue, intensity, luminescence, saturation, and contrast of the portion of the image represented by the pixel (col. 7 lines 45-54). When the transputer 44 determines that the difference between a pixel under test and an adjacent pixel exceeds the predetermined difference, the transputer 44 maps the test pixel as a portion of an edge 66 of the image of human 22 (col. 8 lines 44-55), as the test pixel does not belong to the monochrome background. The transputer 44 performs this analysis on a pixel-by-pixel, row-by-row basis, to determine an edge 66 of the human 22 in the digital image (Fig. 5D). For the edge in Fig. 5D, the transputer 44 performs a fuzzing function to reduce the fuzzy edge 66 to a smooth edge (Fig. 5E, col. 9 lines 30-60).

In Blank, if the background is a checkerboard background 34 (Fig. 2), the transputer eliminates complete boxes 38 of the background that match a background map stored in a memory (col. 10 lines 20-29). The transputer 44 then removes incomplete background boxes with pixel-by-pixel, row-by-row refined background stripping (col. 12 lines 1-5). For this purpose, the transputer 44 selects a new test pixel, and accesses a portion of the stored background map, where the portion corresponds to the position occupied by the test pixel. The transputer 44 next determines whether the test pixel is a dot in a box of the checkerboard background 34 (col. 12 lines 6-14). If the transputer 44 determines that the test pixel is not black (not a dot in a box of the checkerboard background 34), the transputer 44 designates the test pixel as an object edge pixel (col. 12 lines 24-28). The transputer 44 performs this analysis on a pixel-by-pixel, row-by-row basis, to determine an edge 66 of the human 22 in the digital image (Fig. 7C).

In Blank, the transputer 44 can then superimpose the obtained image of the human 22 on a preselected background 59 or 133 (Figs. 5E and 7D). Referring to FIG. 6, the transputer 44 may then perform a fuzzing function for the edge of the human 22. The transputer 44 may also blend the edge of the human 22 with the surrounding background, to sharpen the edge of the human 22 on the new background (Fig. 8, col. 13 lines 11-18).

Blank does not disclose a step of judging whether or not a detected boundary is a true contour of the human 22 for each part of the boundary. Blank also does not disclose a step of applying correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image.

Suppose, for the sake of the argument that detection of the edge 66 in Blank is part of detecting a boundary of the person 22 and the background from the original image. There exists no step in Blank that judges whether or not the edge 66 is a true contour of the person 22 for each part of the edge 66.

In Blank, the detection of pixels for the edge 66 (described at col. 8 lines 44-49) is not a step of judging whether or not the edge 66 is a true contour of the person 22, because, once test pixels are determined to be representative of edge 66, no further test is performed on these edge pixels. In other words, once an edge 66 has been determined, there is no further inquiry during edge determination, on whether or not the edge 66 is a true contour of the person 22.

Furthermore, in Blank, the fuzzing function performed by the transputer 44 to reduce the fuzzy edge 66 to a smooth edge (Fig. 5E, col. 9 lines 30-60), is not a step of judging whether or not the edge 66 is a true contour of the person 22 for each part of the edge 66. For edge fuzzing, the transputer 44 selects one of the edge pixels (i.e., a "test" pixel) by using software determined address (e.g., by selecting the uppermost left pixel) and determines its hue. Next, the transputer 44 selects the edge pixels that are immediately adjacent to the test pixel, and determines the average hue gamma value of the three pixels. The transputer 44 sets the hue gamma value of the test pixel to be equal to the calculated average hue value. The transputer 44 then determines if the test pixel is the last edge pixel to be processed in the fuzzing function (Fig. 8). If not, the transputer 44 selects one of the edge pixels that is immediately adjacent the test pixel, designates this adjacent pixel as the new test pixel, and continues to average pixels in the manner described above. When the transputer 44 determines that the test pixel was the last pixel of the edge 66, the transputer 44 exits the fuzzing function (col. 9 lines 36-60).

Hence, in Blank, the fuzzing function is performed for all pixels in the edge 66. That is, all edge pixels have their hue gamma values replaced with averaged hue gamma values. All edge pixels are indiscriminately processed with the fuzzing function. The fuzzing function does not

judge whether or not the edge 66 is a true contour of the person for each part of the boundary. Firstly, the judging function processes all the pixels of the edge 66 and hence, does not discriminate between a true contour and not a true contour for pixels of the edge 66. Secondly, the fuzzing function simply refines the edge 66, and is, at most, part of edge detection. The fuzzing function improves appearance of an already detected edge 66. The fuzzing function does not, in any way, differentiate between a true contour and not a true contour for the edge 66 of the person 22.

Hence, there is no step or system in Blank that judges whether or not the detected boundary is a true contour of the person for each part of the boundary.

Furthermore, Blank does not disclose applying correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image.

As described above, Blank does not detect a boundary part which is judged not to be a true contour of the person 22. Since no such boundary part is detected in Blank, Blank cannot then apply correction processing for concealing such a boundary part, which is judged not to be a true contour of the person.

There is an additional reason why the fuzzing function performed by the transputer 44 to reduce the fuzzy edge 66 to a smooth edge (Fig. 5E, col. 9 lines 30-60) is not a step that applies correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image. This fuzzing function performed by the transputer 44 to reduce the fuzzy edge 66 to a smooth edge is performed on the original image 54 with the original background 24 (Fig. 5A). This fuzzing function is not performed on the composite image with the new background 59. As described by Blank at col. 9 lines 61-68, after exiting the fuzzing function shown in Fig. 8, the transputer 44 stores the image of the human 22, and can cause the image of the human 22 to be superimposed on a preselected background image 59. This superimposition is described more fully with reference to FIGS. 2, 6, and 7. Hence, a composite image with a new background is obtained after the fuzzing function has been completed.

In Blank, the transputer 44 superimposes the obtained image of the human 22, on a preselected background 59 or 133 (Figs. 5E and 7D). The transputer 44 may then perform the same fuzzing function for the edge of the human 22 (Fig. 8), and blend the edge of the human 22 (Fig. 11) with the surrounding background, to sharpen the edge of the human 22 on the new background (col. 13 lines 11-18). To blend the human 22 into the preselected image, the processor averages the hue of edge of the human 22 and the hue of the portion of the preselected background that is contiguous to the edge. The processor then adjusts the hue of the edge of the human 22 to equal the averaged hue (col. 4 lines 22-27). During blending, the transputer 44 sets the hue of each edge pixel to equal the average hue of the edge pixel and a pixel adjacent to it (col. 13 lines 19-42). The transputer performs the blending function for all edge pixels (col. 13 lines 39-41).

The fuzzing and blending functions performed in Blank on a composite image do not apply correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image. There are at least three reasons for which this is the case.

Firstly, as described above, Blank does not detect a boundary part which is judged not to be a true contour of the person 22. Since no such boundary part is detected in Blank, Blank cannot then apply correction processing for concealing a boundary part, which is judged not to be a true contour of the person.

Secondly, the fuzzing and blending functions of Blank are applied indiscriminately to all pixels of an edge of the human 22 in a composite image (col. 13 lines 39-41, col. 9 lines 58-60). Hence, the fuzzing and blending functions are not applied only to a boundary part which is judged not to be a true contour of the person.

Thirdly, the fuzzing and blending functions of Blank do not conceal a boundary part, but rather emphasize the edge of the human 22. The fuzzing function is used to obtain a smooth edge from a fuzzy edge (col. 9 lines 34-37), and the blending function blends the edges of the human 22 with the surrounding background to sharpen the edge of the object (col. 13 lines 16-17).

Hence, Blank does not apply correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image.

Hence, with respect to claim 1, Blank fails to disclose, at least, "judging whether or not the detected boundary is a true contour of the person for each part of the boundary; and applying correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image."

Also, with respect to claim 4, Blank fails to disclose, at least, "a judging device which judges whether or not the detected boundary is a true contour of the person for each part of the boundary; and an image correcting device which applies correction processing for concealing a boundary part, which is judged not to be a true contour of the person, in the created composite image."

For all of the above reasons, taken alone or in combination, Applicant respectfully requests reconsideration and withdrawal of the 35 U.S.C. 102 (b) rejection of claims 1 and 4. Claims 2-3 depend from claim 1 and are allowable at least by virtue of their dependency. Claims 5-6 depend from claim 4 and are allowable at least by virtue of their dependency.

Conclusion

In view of the above amendments and remarks, this application appears to be in condition for allowance and the Examiner is, therefore, requested to reexamine the application and pass the claims to issue.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Corina E. Tanasa, Limited Recognition No. L0292 under 37 CFR §11.9(b), at telephone number (703) 208-4003, located in the Washington, DC area, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By _____

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